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Patentanmeldung Nr. Patent application No. Demande de brevet n°

03020089.3

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Anmelder/Applicant(s)/Demandeur(s):

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ALLEMAGNE

Bezeichnung der Erfindung/Title of the invention/Titre de l'invention:
(Falls die Bezeichnung der Erfindung nicht angegeben ist, siehe Beschreibung.
If no title is shown please refer to the description.
Si aucun titre n'est indiqué se referer à la description.)

Push-to-talk interworking

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T-Mobile Deutschland GmbH

Push-to-talk Interworking

The present invention relates to interworking between separate communiation networks using dialled connections and especially to a push-to-talk communication method for enabling a subscriber to communicate with one or more subscribers of one or more communication networks without using a dialling procedure.

It is state of the art to use a dialling procedure in digital communication systems to set up a communication path between two subscribers of a communication network.

Within the text of this patent or patent application the abbreviation „PoC" shall mean Push-to-talk over Communication system
„PoC AS" shall mean Push-to-talk over Communication system Application Server

Push-to-Talk Interworking between different Operators - Technical Solution

For Push-to-Talk service it will be essential to interwork between different operators (e.g. interworking between Operator 1 and Operator 2). As there is no standard mechanism specified in order to realise the interworking, the following technical solution is proposed.

Push-To-Talk enables a user to send a message either streamed or transferred at one to one or a group of users after pressing a button or initialising a start signal in an other known technique. Special actions have to be taken to organise a Push-To-Talk Group across operators.

In the following the necessary mechanisms are explained.

Fig. 1 shows the situation when both operators offer groups to each other

- Operator1 and Operator2 negotiate a contract, that Operator2 is allowed to offer the group poc-group@op2.net and Operator1 offers the group poc-group@op1.net
- User n+1 to m join the group poc-group@op2.net from Op1 side
- User 1 to n join the group poc-group@op1.net from Op2 side
- Synchronisation takes place between Operator1 and Operator2 PoC Servers, so the group members of poc-group@op1.de and poc-group@op2.net are known for Operator2 and Operator1 as well
- Synchronisation automatically by PoC servers
- Synchronisation in case a user requests update of all group members before sending a PoC message

Fig. 2 shows the situation when only operator 2 offers groups to customers of operator 2 and 1

- Operator1 and Operator2 negotiate a contract, that Operator2 is allowed to offer the group poc-group@op2.net
- User n+1 to m join the group poc-group@op2.net from Op1 side
- User 1 to n join the group poc-group@op2.net from Op2 side
- Synchronisation takes place between Operator1 and Operator2 PoC Servers, so the group members of poc-group@op2.de are known for Operator1 and Operator2 as well
- Synchronisation automatically by PoC servers
- Synchronisation in case a user requests update of all group members before sending a PoC message

Fig. 3 shows the Push-to-Talk User Signalling/Traffic Flow (Alternative I)

- A user m logged to Op1 presses the PoC button, all or parts of the members of the poc-group@op2.net are known/not known in the Op1 PoC server due to synchronisation/request mechanism
- The messages are terminated towards all users except User m logged on to Op1 and to the users of the group logged on to Op2
- The PoC server may generates billing records and Interconnection (IC) records for accounting

- The PoC AS of Op1 acts as proxy for a single user of poc-group@op2.net logged on to the operator 1 network and contact the PoC master server for the group located at operator 2
- The server of Operator 2 may be identified by a address derived from the group address

Fig. 4 shows the Push to Talk User Signalling/Traffic Flow (Alternative II)

- A user m logged to Op1 presses the PoC button, all or parts of the members of the poc-group@op2.net are known/not known in the Op1 PoC server due to synchronisation/request mechanism
- The messages are terminated towards all users except User m logged on to Op1 and to the users of the group logged on to Op2
- The PoC server may generates billing records and Interconnection (IC) records for accounting
- The PoC AS of Op1 acts as proxy for a single user of poc-group@op2.net logged on to the operator 1 network and contact the PoC master server for the group located at operator 2
- The PoC AS may also act as partial PoC group server (partial group proxy) for all users of poc-group@op2.net logged on to the operator 1 network and contact the PoC master server for the group poc-group@op2.net. The traffic between the servers may be a server-server connection combining the traffic of the partial groups.
- The server of Operator 2 may be identified by a address derived from the group address

Fig. 5 shows the Push-to-Talk User Signalling/Traffic Flow (Alternative III)

- A user m logged to Op1 presses the PoC button, the message is routed to the poc-server of Operator2
- The messages are terminated towards all users except User m logged on to Op1 and to the users of the group logged on to Op2

1. The PoC server may generates billing records and Interconnection (IC) records for accounting

- The server of Operator 2 may be identified by a address derived from the group address

General:

The above mechanisms may be used for Push-To-Talk systems or any other system using group communication in any form.

The mechanisms apply to fixed/wireless and circuit/packet based communication networks.

Any address scheme (e.g. IP-address, phone numbers, SIP-URIs, ULRs, email-addresses) may be used to identify the users and groups.

Dedicated signalling protocols are used to exchange information about the groups (e.g. size, member, status of the members).

The mechanisms may be used with 3 or more operators simultaneously.

Abbreviations

PoC	Push-to-talk over Communication System
Poc AS	Push-to-talk over Communication System Application Server
Op1	Operator 1
Op2	Operator 2

Claims

1. Method for operating a push-to-talk communication between a PoC-group consisting of at least of one member of a first communication network and a PoC-group consisting of at least of one member of a second communication network, using a PoC application server in each communication network
characterised by the steps of
- connecting the members of the PoC-group of the first network operator with the members of the PoC-group of the second network operator
- synchronising the PoC application servers to each other.

2. Method for operating a push-to-talk communication according to claim 1 **characterised by** the steps of
- connecting the members of the PoC-group of the first network operator from the side of the second network operator and
- connecting the members of the PoC-group of the second network operator from the side of the first network operator
- synchronising the PoC application servers to each other.

3. Method for push-to-talk communication between the members of an exiting push-to-talk communication session and a group of an additional communication network, using a PoC application server in each communication network
characterised by the steps of
- connecting the additional group to each of the existing groups of the session and
- synchronising the PoC application server of the additional group to the previously synchronised PoC application servers.

4. System for push-to-talk communication between push-to-talk groups of at least two communication networks
characterised by one common group management system and at least one subsystem for each operator consisting of at least one Push-to-talk Communication Application Server (PoC AS).

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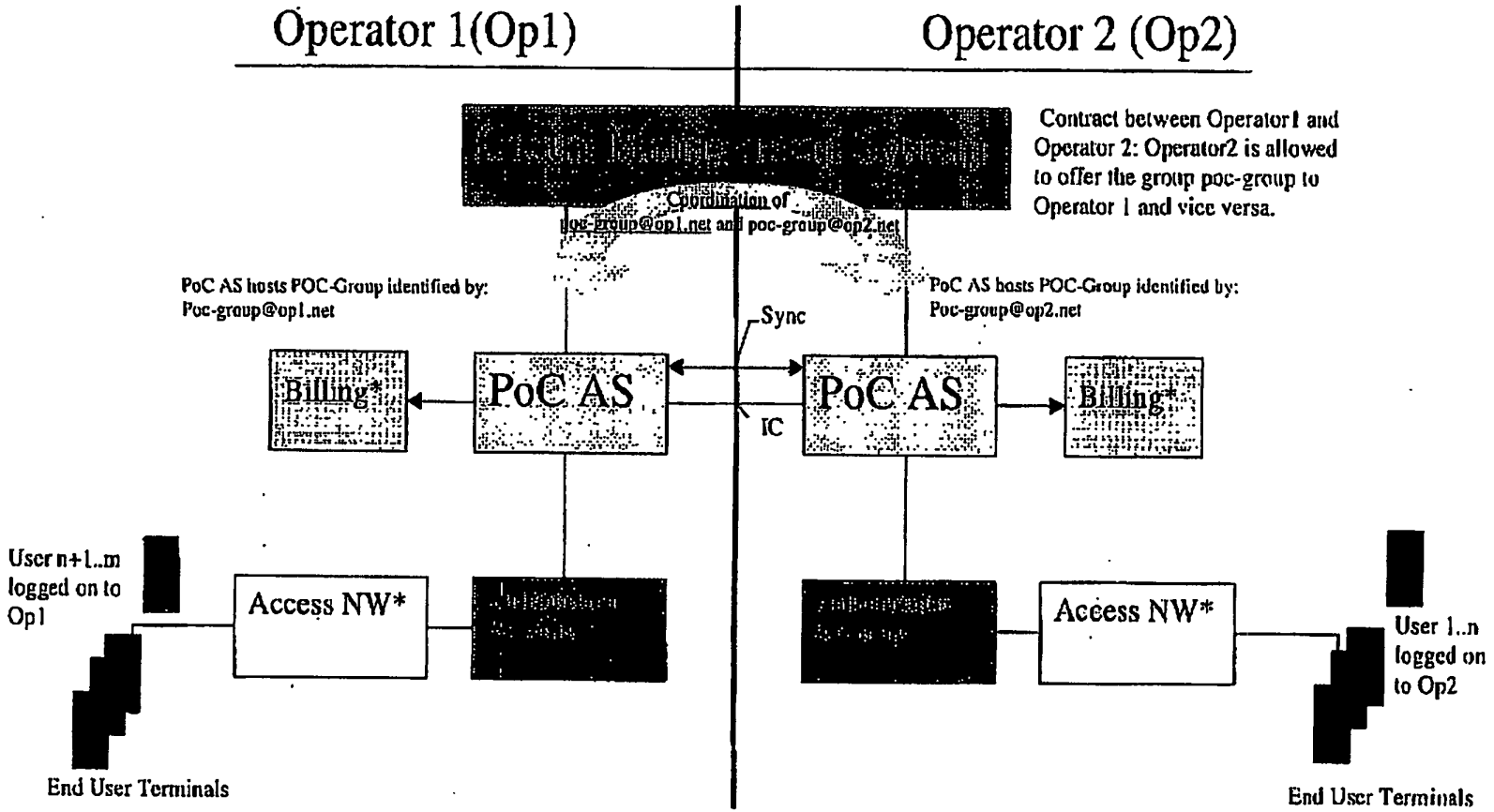
Scenario 1 : Both Operators offer groups to each other



*: Optional components

Fig. 1

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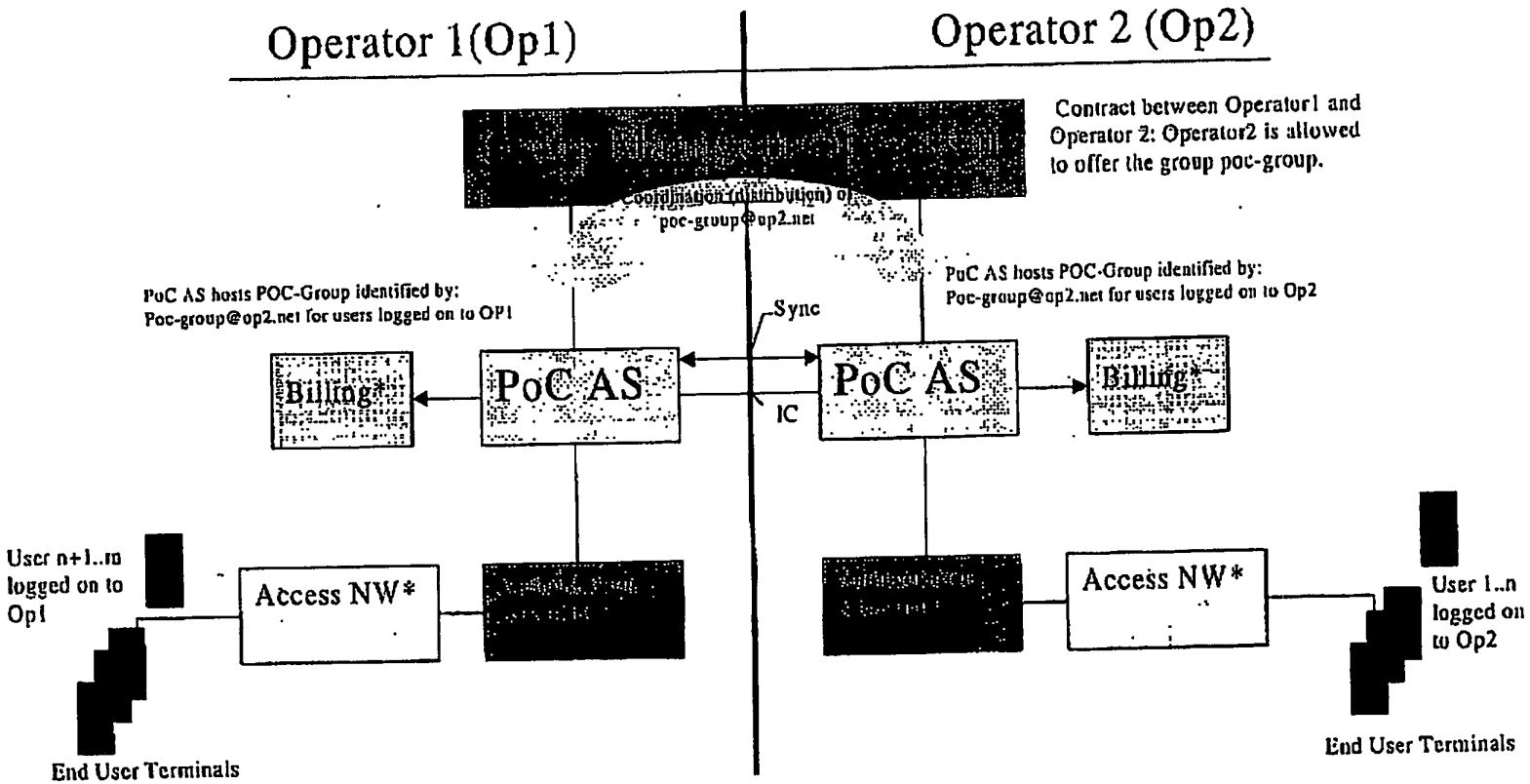
Scenario 2 : Only Operator 2 offers groups to customers of operator 2 and 1



*: Optional components

Fig. 2

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Push-to-Talk User Signalling/Traffic Flow (Alternative I)

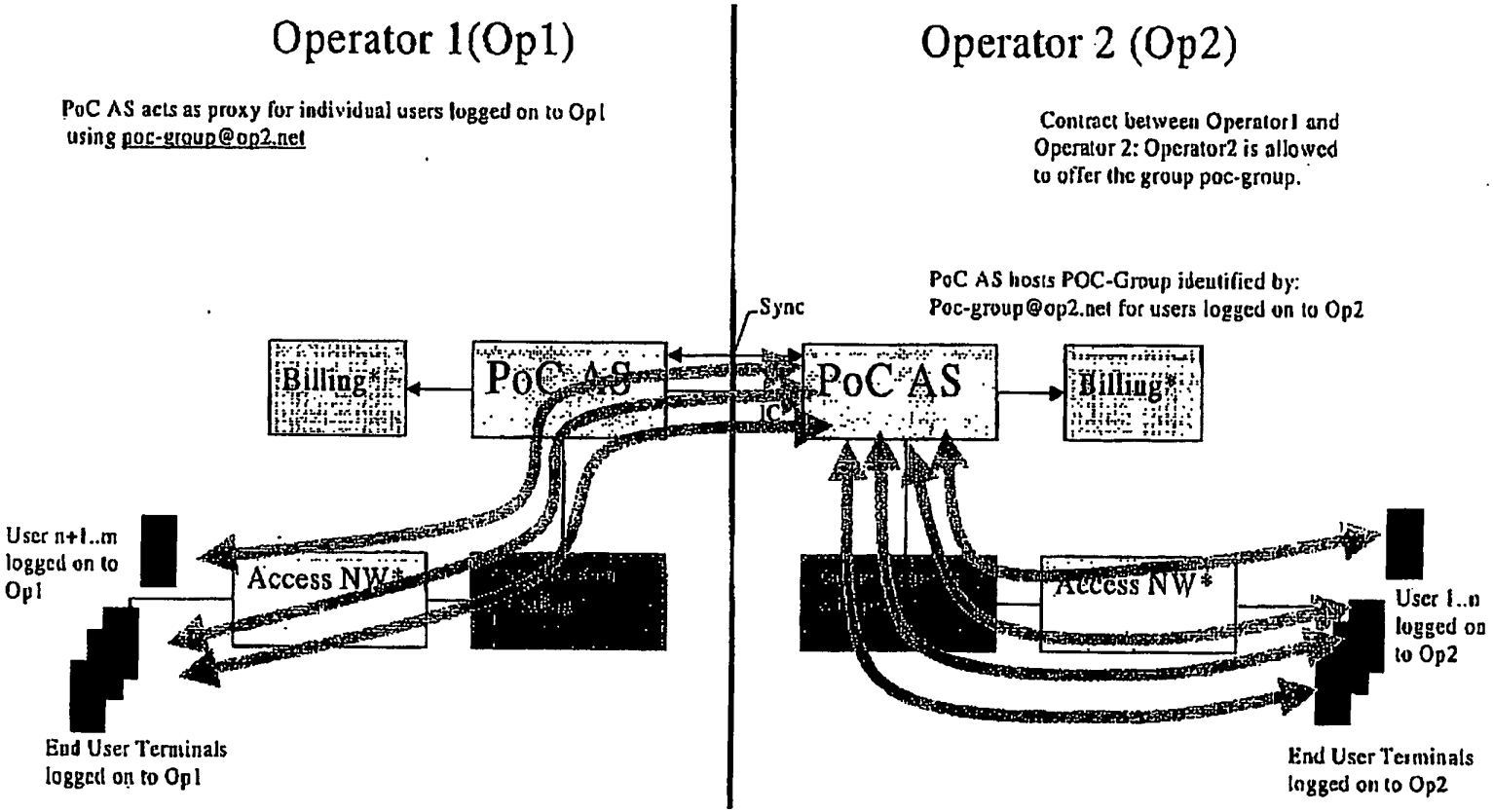

Fig. 3

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Push to Talk User Signalling/Traffic Flow (Alternative II)

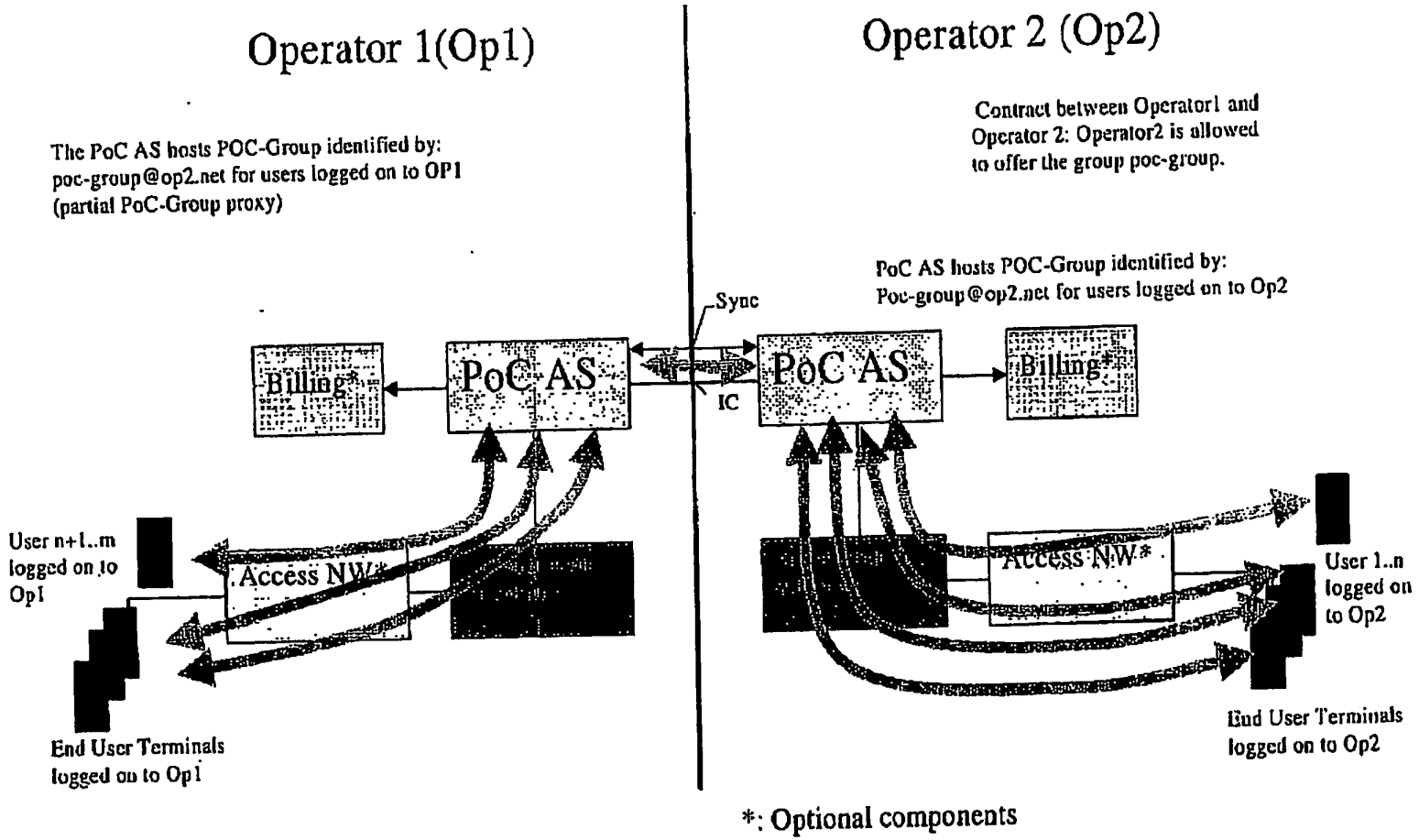

Fig. 4

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Push-to-Talk User Signalling/Traffic Flow (Alternative III)

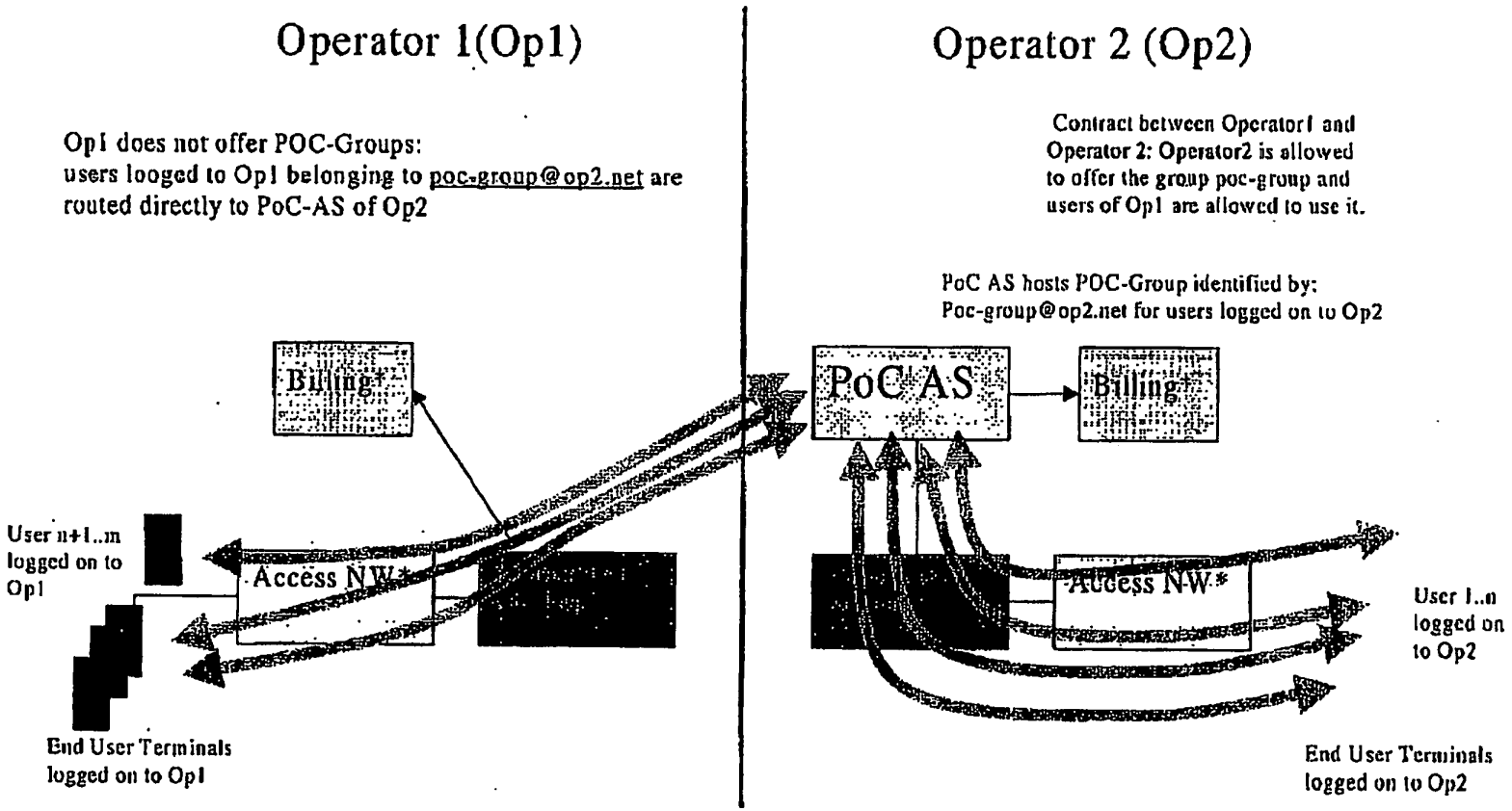

Fig. 5

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